FY 2005

Mississippi
Trauma Care System Plan

MISSISSIPPI STATE DEPARTMENT OF HEALTH

Emergency Medical Services

Developed by the:
Bureau of EMS/Trauma System Development Staff

Mississippi State Department of Health

Brian W. Amy, MD, MHA MPH
State Health Officer

Jim Craig, Director
Health Protection

Keith Parker, Director
Bureau of EMS/Trauma System Development

Bureau of EMS/Trauma System Development

Trauma Branch

Jim Wadlington, Director
Trauma System Development

Christy Craft, RN
Trauma Program Manager

Kelly Trinkner, RN
Trauma/EMS Grant Manager

Carrie McFarland
Trauma Registrar

Support Services

Keiza Reid
Auditor/Accountant

Pamela Brown
Administrative Assistant

Mississippi State Department of Health
Bureau of EMS/Trauma System Development
Post Office Box 1700
Jackson, Mississippi 39215-1700
601/576-7380
FAX: 601/576-7373

Mississippi Trauma Advisory Committee

Brian W. Amy, MD, MHA, MPH, Chairman

Hugh Gamble, M.D.

William T. Avara III, M.D.

John Brahan, M.D.

John T. Riggs, REMT-P

David K. Cook, Sr.

Wade N. Spruill, Jr.

Robert Galli, M.D.

Gregory Timberlake, M.D.

Bennie Wright, M.D.

Ben Yarborough, M.D.

H. S. McMillan

John Nelson, M.D.

Charles Piggott, M.D.

Christine Weiland

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Legal Authority and Purpose

Section 41-59-5 (5) et seq., Mississippi Code 1972 Annotated, as amended, established the Mississippi State Department of Health Division of EMS as the lead agency, in consultation with and having solicited advice from the EMS Advisory Council, to develop a uniform nonfragmented inclusive statewide trauma care system that provides excellent patient care. It was the intent of the Legislature that the purpose of this system was to reduce death and disability resulting from traumatic injury, and in order to accomplish this goal it was necessary to assign additional responsibilities to the department.

The department is assigned the responsibility for creating, implementing and managing the statewide trauma care system. The department shall develop and administer trauma regulations that include, but are not limited to, the Mississippi Trauma Care System Plan, trauma care system standards, trauma center designations, field triage, interfacility trauma transfer, EMS aero medical transportation, trauma data collection, trauma care system evaluation and management of state trauma systems funding. The department shall cause the implementation of both professional and lay trauma education programs. These trauma educational programs shall include both clinical trauma education and injury prevention. As it is recognized that rehabilitation services are essential for traumatized individuals to be returned to active, productive lives, the department shall coordinate the development of the inclusive trauma system with the Mississippi Department of Rehabilitation Services and all other appropriate rehabilitation systems. The State Board of Health is authorized to receive any funds appropriated to the board from the Mississippi Trauma Care System Fund created in Section 41-59-75. It is further authorized, with the Emergency Medical Services Advisory Council and the Mississippi Trauma Advisory Committee acting in advisory capacities, to administer the disbursements of such funds according to adopted trauma care system regulations.

The department shall take the necessary steps to develop, adopt and implement the Mississippi Trauma Care System Plan and all associated trauma care system regulations necessary to implement the Mississippi trauma care system. The effective dates of the *Fiscal Year 2005 Mississippi Trauma Care System Plan* extend from July 1, 2004, through June 30, 2005, or until superceded by a later *Plan.*

Introduction

Trauma is a serious public health problem in Mississippi, as well as the nation as a whole. Traumatic injury, both accidental and intentional, is the leading cause of death for those under the age of forty (40). Each year, more than 180,000 Americans die and more than half that many are permanently disabled as a result of injury. Trauma typically involves young adults and results in the loss of more productive work years than both cancer and heart disease combined. Health care costs, in addition to the loss of productivity, account for 100 billion dollars annually. The emotional costs are immeasurable.

In 1995, there were 1,605 deaths due to unintentional injuries in Mississippi, for a rate of approximately 59.6 per 100,000 persons. This made unintentional injuries the fourth leading cause of death in the state following heart disease, malignant neoplasms, and cerebrovascular disease. Intentional injuries are also on the list of top 10 causes of death in Mississippi. Homicide was the eighth most common cause of deaths (429 in 1995 or 15.9/100,000) and suicide (318 in 1995 or 11.8/100,000) was number 10. These rankings have remained consistent over the past decade.

Mississippi Facts

Most of the deaths due to the three leading causes occur in the elderly, while 50-75% of the trauma deaths in Mississippi occurred in people from 15-44 years of age. Consequently, there are more years of potential life lost from trauma then from heart disease and cancer combined' and for every death due to trauma there are at least two permanent, major disabilities. Trauma is a disease of the young. Unintentional injuries were the leading cause of death for all age groups in Mississippi from 1 to 44 years, and homicide was second in the age groups 1-24 years. Even there were only 15 deaths in 1995 from homicide in the age group 1-4, this was greater than three times the number of deaths from malignant neoplasm's (4) in this age group. These age groups are less likely to be covered by commercial insurance or by third party payers than any other age groups, and consequently, trauma care has become a financial burden on hospitals that care for a large proportion of injured patients.

Although 59.6 deaths per 100,000 population per year from unintentional injuries may seem to be an inconsequential number, this rate far exceeds the national average rate of 34.1. In fact, in 1992 Mississippi had the second highest rate of deaths from injury in the United States. The rate for deaths has always been relatively high in sparsely populated western states such as Alaska, Wyoming, Montana and New Mexico. This may relate to the relatively long distances between towns and greater delays in transporting injured or trauma victims to hospitals.

The reason for the high trauma death rate in Mississippi is less clear. Although the state is rural in character, population centers are fairly well distributed and geographic access to emergency medical care should not be a major problem. Motor vehicle crashes account for more than 69% of the unintentional injury deaths in the state. Some of the problem of high unintentional injury death rates may relate to the relatively low use of seatbelts and the high number of crashes per person or per miles traveled due to the high number of two lane highways. From 1990-1994 there were 361,141 motor vehicle crashes in Mississippi resulting in 150,968 injuries. In the last eleven years, total crashes have increased 50.5% and injuries have increased 63.1%. Although the injury rate has increased, the fatality rate has fluctuated but has not increased significantly. This may be due to the increased usage of motor vehicle restraint devices, from 21.8% in 1990 to 46% in 1995.

Deaths from homicide also occur at a very high rate in Mississippi. For the past decade the rate has been approximately 12.2 deaths per 100,000, putting Mississippi consistently in the ten top states in the nation for rate of homicide deaths. While the homicide rate in Mississippi has been fairly constant for the past ten years, homicide rates in other states have fallen causing Mississippi to rank in the top five states for homicide death rates. The homicide rate for blacks is four times greater than for whites, with the vast majority occurring in young black males. There were a similar number of deaths from suicide, but conversely, most of these occurred in white males.

Chronology of Trauma Care in Mississippi

Passage of legislation during the 1991 Mississippi legislative session designated the Division of Emergency Medical Services (DEMS), Mississippi State Department of Health (MSDH), as the lead agency to develop a trauma care plan for the state. Since the passage of this law, the DEMS has completed a Technical Assessment of EMS and Trauma Care conducted by the National Highway Traffic Safety Administration (NHTSA) and held a development of Trauma Systems (DOTS) course for EMS, hospital and other personnel also conducted by NHTSA. The law provides that the State Department of Health, Division of Emergency Medical Services, acting as lead agency, in consultation with and having solicited advice from the Emergency Medical Services Advisory Council, shall develop a plan and submit to the Legislature a plan for the triage, transport, and treatment of major trauma victims that at a minimum addresses the following:

A. The magnitude of the trauma problem in Mississippi and the need for a statewide system of trauma care;
B. The structure and organization of a trauma care system for Mississippi;
C. Pre-hospital care management guidelines for triage and transportation of major trauma victims;
D. Trauma system design and resources, including air transportation services, and provision for interfacility transfer;
E. Guidelines for resources, equipment, and personnel within facilities treating major trauma victims;
F. Data collection and evaluation regarding system operation, patient outcome, and quality improvement;
G. Public information and education about the trauma system;
H. Medical control and accountability;
I. Confidentiality of patient care information;
J. Cost of major trauma in Mississippi; and
K. Research alternatives and provide recommendations for financial assistance of the trauma system in Mississippi, including, but not limited to, trauma system management and uncompensated trauma care.

In 1992, DEMS took the first steps in developing a statewide trauma system by implementing a statewide trauma registry. The trauma registry was originally installed in five regional hospitals strategically located throughout the state. To date, each hospital participating in the Mississippi Trauma System is actively collecting trauma data and submitting it to DEMS. This data provides a stable foundation for the development of the Mississippi Trauma System.

In 1997, the Mississippi Legislature established a 17-member Trauma Care Task for (TCTF) to review the status of trauma and its impact on the public's health. The Legislature authorized the Trauma Care Task Force to:

A. Assist the State Department if Health by studying the status of trauma care in Mississippi during 1997;
B. Further develop the Mississippi Trauma Care Plan, which shall address the nature of the state's trauma care system and any additional legislation that may be needed to further enhance the plan;
C. Further empower the MSDH in its authority to develop the state's trauma system.
D. Research financial mechanisms appropriate for offsetting uncompensated trauma care provided to victims of traumatic injury; and
E. Present the findings of the trauma care study and the revised Trauma Care Plan to the Governor and to all members of the Legislature for consideration during the 1998 Legislative Session.

The recommendations of the TCTF were formalized into a report that was presented to the Governor and Legislature on December 15, 1997. The report was used as a guideline for drafting and subsequent passage of House Bill 966, "an act relating to a statewide Trauma Care System".

Based on the TCTF report, the 1998 Legislature passed legislation (HB 966) giving the Division of Emergency Medical Services, Mississippi State Department of Health the authority to develop a statewide trauma care system. This legislation also established a permanent funding source through a $5 assessment on all moving traffic violations, creating the Trauma Care Trust Fund. This money is available for administrative functions at both the state and regional levels. The legislation also expanded the Mississippi Emergency Medical Services Advisory Council to include trauma professionals, which make up the Mississippi Trauma Advisory Committee (MTAC).

The passage of this legislation means many things to different entities. Participation in the statewide system is voluntary. Hospitals and medical staff make the decision on whether or not to participate. If an acute care facility decides to participate, they work in conjunction with other facilities in its region to develop regional trauma plans and protocols. Pre-hospital providers receive new trauma specific training, new field triage protocols, and they become more involved in the evaluation of patient outcomes.

The Mississippi Trauma Advisory Committee (MTAC) was developed as a subcommittee of the EMS Advisory Committee. In 1998, they developed the Mississippi Trauma Care Regulations and subsequently were adopted by the State Board of Health in October. These Regulations describe the requirements for Regional Plan development and the trauma center designation process. They also state the hospital requirements for trauma program development which includes the entire continuum of care from injury to rehabilitation.

The Mississippi legislature added $6 million to the Trauma Care Trust Fund during the 1999 Legislature Session. These additional monies brought the total amount in the Trauma Care Trust Fund to about $8 million per year. Legislators authorized annual funding for regional support and uncompensated trauma care as defined by the trauma registry through regional contracts with the Department of Health payable from the fund.

The funds became available on July 1, 1999, for designated Trauma Care Regions through annual contracts with the State Department of Health, Division of Emergency Medical Services. The first checks were distributed in April 2000 after hospital designations were announced for Level I and II trauma centers. A total of $6,538,545 was distributed from the Trauma Care Trust Fund for reimbursement of uncompensated care. The fund was divided between designated trauma center hospitals and eligible physicians based on allocation of 70% to hospitals and 30% to eligible physicians.

Additionally in 1999, seven trauma care regions were designated by the Mississippi State Department of Health. Each designated Trauma Care Regions are 501c3 not-for-profit organizations, in which the Department contracts with the Region to develop and implement a Regional Trauma Plan.

In 2000, the MSDH provisionally designated a total of 61 trauma centers that include: one Level I trauma center; five Level II trauma centers; 12 Level III trauma centers; and 41 Level IV trauma centers. Subsequent to the initial inspection, each trauma center is must be re-inspected in no less than 15 months to evaluate trauma program progress.

Also in 2000, the MSDH distributed $6,538,545 from the Trauma Care Trust Fund for reimbursement of uncompensated care. The fund was divided among designated trauma center hospitals and eligible physicians, based on an allocation of 70 percent to hospitals and 30 percent to eligible physicians.

In 2001, the MSDH provisionally designated one Level I Trauma Center. No other trauma center inspections occurred in 2001. Additionally, the MSDH distributed $6,931,988 from the Trauma Care Trust Fund for reimbursement of uncompensated care. The same 70/30 allocations between the designated trauma centers and eligible physicians remained the same in 2001.

In 2002, all designated trauma centers recieved a consultative visit inspection. These consultative visits provided an on-site trauma program review of the trauma center's trauma program. These consultative visits also provided educational opportunities for the trauma center

to learn more effective and efficient methods to improve the facilities trauma program.

The MSDH also distributed $7,543,809 from the Trauma Care Trust Fund for reimbursement of uncompensated care reimbursement for trauma patients in 2002. The 70/30 allocation ratio of disbursement to hospitals and physcians remained in effect.

In 2003, all designated trauma centers recieved a consultative visit inspection. These consultative visits provided an on-site trauma program review of the trauma center's trauma program. These consultative visits also provided educational opportunities for the trauma center to learn more effective and efficient methods to improve the facilities trauma program. From the consultative visits the MSDH completely designated one Level I Trauma Center, two Level III Trauma Centers, and six Level IV Trauma Centers.

Also in 2003, the MSDH distributed $ 7,510,172.00 from the Trauma Care Trust Fund for reimbursement of uncompensated care reimbursement for trauma patients. The 70/30 allocation ratio of disbursement to hospitals and physcians remained in effect.

Mississippi Trauma Care System Plan

Mississippi Trauma Care System Plan

This Plan proposes the development of a statewide system for the care of trauma victims. Authority for planning, coordination, and evaluation of the system is centralized within the Bureau of EMS/Trauma System Development (BEMS), as trauma is an ongoing problem to the emergency medical care system. However, because Mississippi is truly a rural state, primary transport to a Level I or Level II trauma center is not a viable option in most instances. Initial resuscitation and stabilization efforts are by necessity done at closer, local facilities. Physicians in many of these facilities are not "in-house" and must be summoned to the hospital and are not necessarily skilled in the care of trauma patients. The goal is an inclusive model, matching appropriate responses to the needs of the patient. This "inclusive" trauma system is the immediate stabilization of trauma patients and transfer from these local receiving hospitals to other hospitals (trauma centers) with the necessary resources to care for the specific needs of trauma patients.

These facts indicate that a regional approach supported and coordinated by the central lead agency will provide the best care for these patients. Because Mississippi has vast experiences with regional EMS programs, and because all EMS regions were initially designed around at least one major hospital, BEMS proposes using the existing EMS regions as the Trauma Regions. This will allow the trauma problem in Mississippi to be addressed from both a local/regional level as well as a statewide level.

Vision

The Mississippi Trauma Care System, when fully implemented throughout Mississippi will enhance community health through an organized system of injury prevention, acute care and rehabilitation that is fully integrated with the public health system in a community. The Mississippi Trauma Care System will possess the distinct ability to identify risk factors and related interventions to prevent injuries in a community, and will maximize the integrated delivery of optimal resources for patients who ultimately need acute trauma care. The trauma care system will address the daily demands of trauma and form the basis for disaster preparedness. The resources required for each component of the trauma care system will be clearly identified, deployed and studied to ensure that all injured patients gain access to the appropriate level of care in a coordinated and cost-effective manner.

Goals

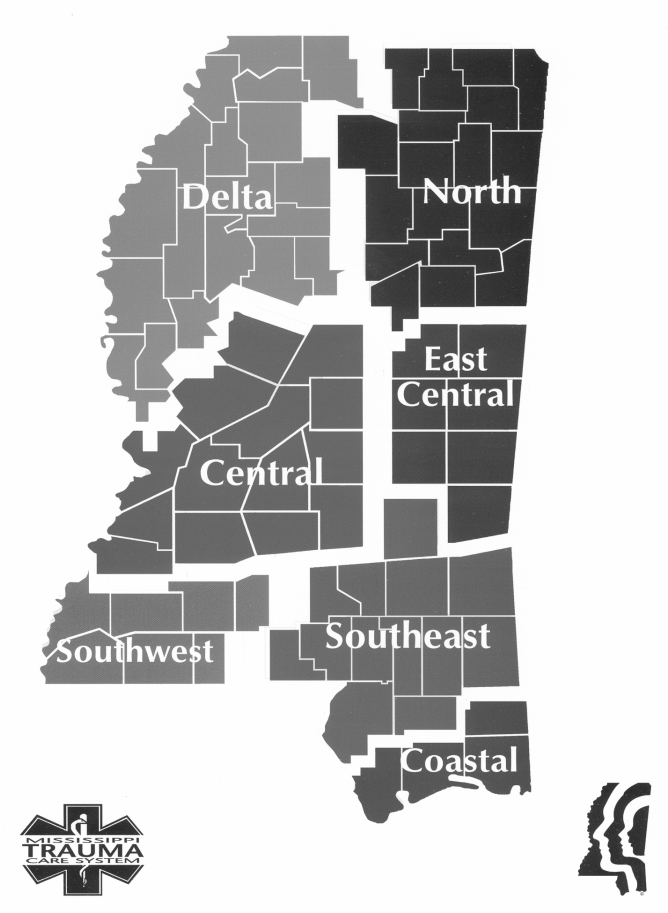
- *Assure a role for all Mississippi hospitals in the trauma system*
- *Assure traumatically injured patients are transported to the closest, most appropriate hospital*
- *Participation of all Mississippi hospitals in the statewide trauma data collection system*

- *Assure that citizens and visitors to Mississippi are aware of the statewide trauma system*
- *Provide education to the citizens of Mississippi in trauma prevention*

Regional Trauma System

The concept of an inclusive trauma care system promotes regionalization of trauma care, so that all areas receive the best possible care. Equally important, an inclusive trauma care system must identify high-risk behaviors in each community and the patient groups at risk for injury so that the system can provide an integrated approach to care that is responsive and appropriate to local needs.

The Mississippi Statewide Inclusive Trauma Care System is based on the concept of regional medical care, recognizing current patient flow patterns. The state has been divided into seven (7) trauma care regions.



Map II -1

Each region must establish a Trauma Care Region Board that acts as the lead administrative body of that region. The Mississippi State Department of Health (MSDH), Bureau of EMS/Trauma System Development (BEMS) has a contract with each of the seven (7) trauma care regions. Through this contract, the regions are responsible for the disbursement of Trauma Care Trust Funds; Regional trauma data collection; the establishment of Regional treatment, triage and patient destination protocols. This is accomplished by each region developing a regional trauma care plan that is approved by BEMS and is included in the overall state trauma plan.

Goals

- *Maintain a coordinated Regional Trauma System*
- *Assure that all Trauma Regions work in harmony with other Trauma Regions*
- *Maintain a system of funding for the Trauma Regions*

Trauma System Design

The goal of the trauma care system is to provide optimal medical care to all injured persons throughout the continuum of care including, prevention, prehospital care, acute care, and rehabilitation. The integration of all hospitals into the system is referred to as an *inclusive* trauma system. By providing a comprehensive approach to trauma care, geographical or geopolitical barriers are minimized and morbidity and mortality are reduced. Inclusive trauma care systems address the needs of all injured victims and identify the roles of the institutions that serve them. The concept of an inclusive system applies to both the rural and urban setting and strives to match each hospital's resources with the needs of the victim.

In rural states like Mississippi, unique logistical problems are present including long distances, difficult access, adverse weather conditions, and sparse population densities. The challenge in designing a trauma system in rural areas is to be able to ensure that each facility provides the level of specialized care within its capacity with referral capabilities built into the system for tertiary care.

System design includes integration of the essential components of a trauma care system; prehospital triage and identification of major trauma victims, medical control and direction, facility resources and identification, data collection and evaluation, public information and education, systems cost and funding. Each component is a vital link in the effectiveness of the overall system in reducing premature death and disability from traumatic injury.

Goals

- *Maintain the integration of all of the essential components of the Mississippi Trauma System*
- *Assure that the Mississippi State EMS System remains integrated with the State Trauma System*

Hospital Resources

The American College of Surgeons, Committee on Trauma (ACS/COT) and the American College of Emergency Physicians (ACEP) have adopted guidelines for the categorization of facilities providing care to the major trauma victim. Mississippi's Trauma Plan closely follows these guidelines. Each of these guidelines stress the importance of having available resources ready to administer to the needs of the patient in a timely manner and to the extraordinary commitment of hospital resources and personnel. One of the most important components of trauma system design is the rationalization of trauma facilities and the integration of trauma centers into the EMS system. It is essential to take into consideration the spectrum of care for all victims and the ability of each facility to provide treatment and care for the major trauma victim.

The most widely used guidelines for trauma center designation are those developed by the ACS/COT. These guidelines have been reviewed and adopted to reflect specific nuances to Mississippi. These guidelines identify four levels of trauma center classification, which are as follows:

Level I	Generally a University based hospital with the ability to provide leadership and complete care for every aspect of injury from prevention to rehabilitation. These facilities have a commitment to research and teaching.
Level II	An acute care hospital with the commitment, resources and specialty training necessary to provide sophisticated trauma care.
Level III	An acute care hospital with the commitment, medical staff, personnel and specialty training necessary to provide initial resuscitation of trauma patients.

Level IV Small, rural acute care facilities with a commitment to the resuscitation of the trauma patient and written transfer protocols in place to assure those patients who require a higher level of care are appropriately transferred.

All facilities, except the highest level, are required to have transfer agreements in place with higher-level facilities to expedite and facilitate the transfer of patients in need of a higher level of care. Transfer agreements are also in place for specialty care patients such as burns and neonates.

Inherent in an inclusive trauma system is the participation of all facilities to ensure system effectiveness. In Mississippi, it is essential and part of the system design, that all facilities that treat injured victims be considered part of the trauma program and participate as active members of the trauma system. In order to ensure a certain level of care to all trauma patients, facilities not participating as active members of the trauma system may be bypassed and trauma patients taken to a participating facility with a commitment to care of the trauma patient.

Goals

- *Assure that all designated trauma hospitals continue to maintain the highest level of standards*
- *Assure that all designated trauma hospitals are current in their trauma certification*
- *Assist with the provision of Continuing medical Education in the area of trauma care*

Performance Improvement

Each hospital wishing to be designated as a Mississippi Trauma Center must submit a written application describing how they meet each of the requirements for their level of designation. Level I, II and III applicants are then surveyed to assure compliance with the required criteria. This survey is conducted by out-of-State trauma physicians with significant experience in trauma care. Physicians and nurses from the Level I, II and III hospitals in the State survey level IV applicants. Data collection from the pre-hospital providers and each regions trauma centers provides the basis for evaluation of each trauma regions trauma care system and the Statewide Trauma System. Data collected by the region is aggregriated and forwarded to the State.

Each region is responsible for reviewing its data to assure consistency with the Regional Trauma Plan. A Medical Audit Committee in each Region will develop a patient care and outcomes measurements program. Analysis of this peer review data will allow determination of trends in patient care.

The Mississippi Inclusive Trauma Care Plan is a dynamic plan and as such will require continuous monitoring and modification. The State Lead Agency in conjunction with each of the Regional Trauma Care Boards will work to make the system more efficient and responsive to the needs of trauma patients.

Goals

- *Establish and maintain a Statewide Trauma Registry*
- *Provide technical assistance to Regions and Trauma Centers for the trauma registry*
- *Provide aggregate trauma data feedback to Trauma regions and Trauma facilities*
- *Provide the necessary upgrades to the Statewide Trauma Registry as needed*
- *Provide Trauma related data to public officials in order to give them the necessary information needed to craft appropriate legislation*

Administrative Components

Pursuant to the legislation passed by the State in 1998 the Mississippi State Department of Health, Emergency Medical Services Division has been designated as the lead agency for trauma systems oversight.

The Office of Emergency Planning and Response is comprised of two Bureaus (see org chart). In order to assure integration of trauma services within the EMS system, Trauma Services are under the direction of the State Emergency Medical Services Director.

The BEMS is responsible for the administration of the statewide EMS/Trauma System including policy development, planning, program and policy implementation, promulgation and coordination of regulatory efforts, and general administrative activities necessary to oversee the trauma system.

The BEMS is responsible for providing staff assistance to the State EMS Advisory Council that assists the Division in the development of statewide policies and protocols.

Goals

- *Maintain necessary staff to provide needed assistance to Trauma Regions and trauma facilities throughout Mississippi*

Finance

In 1982, Mississippi passed legislation entitled "Emergency Medical Services Operating Fund" (EMSOF). This legislation created the fund by collecting assessments against all moving traffic violations. This assessment was increased from five dollars ($5.00) for EMS to an additional five dollars ($5.00) for trauma per moving traffic violation in order to help fund the statewide trauma system. Monies from this fund are used to support the statewide trauma system in four major areas:

State administration

Regional administration

Public information and education

Physician and hospital indigent care

In 1999 and subsequent years, the Mississippi Legislature added $6,000,000.00 annually to the trauma care trust fund from the Health Care Expendable Fund. Representatives of the Mississippi Trauma Advisory Council (MTAC) and the Divison of EMS (DEMS) worked to create a formula to allocate available monies from the Mississippi Trauma Care Trust Fund. This reimburses eligible hospitals and physicians for treating uncompensated trauma cases through trauma centers designated by the Mississippi State Department of Health, Office of Emergency Planning and Response. Only treatment of patients qualified for entry in the trauma center's trauma registry that also meet the definition of "uncompensated" can be submitted for reimbursement from the fund.

Uncompensated care is defined as:

> *Care for which the provider decides not to collect payment because of the patient's inability to pay. A claim is considered to be uncompensated if, after the provider's due diligence to collect monies due, total payment from any source (including third party payors) of 5% or less has been made on the total trauma-related gross charges.*

Providers are not required to submit gross charges or collection amounts for any claim submitted for reimbursement from the fund. Because physicians and hospitals separately evaluated their trauma cases to determine if they were uncompensated, physician cases that met the definition of uncompensated were not necessarily the same cases as those claimed as uncompensated by the hospital. However, all cases have to qualify for the hospital's trauma registry before they can be reimbursed.

The Trauma Care Trust Fund allocation system is based on relative values. Centers for Medicare/Medicaid Services (CMS) assigns a system for DRG's (hospitals) and CPT codes (physicians). Relative values were chosen for this allocation system because they are standard among hospitals and physicians in Mississippi, unlike gross charges or cost structures, which can vary widely among providers. They are also published and utilized by Medicare, in which the majority of physicians and hospitals in Mississippi participate.

Qualified Physician Reimbursement Claim and *Trauma Center Reimbursement Claim* forms with detailed instructions were developed for providers' use. BEMS released the Mississippi Trauma Care Trust Fund Guidelines along with a list of Frequently Asked Questions (FAQ), to the seven trauma care regions. These provided additional assistance to the providers in interpreting and following the policy.

Monies are distributed to each trauma regions advisory board for distribution to participation hospitals and physicians.

Goals

- *Increase and maintain funding to finance emergency medical services to allow for a "level of readiness" necessary to provide appropriate trauma care services for all injured patients both on a day-to-day basis and in the event of a natural or unconventional disaster.*

Public Awareness and Trauma Prevention

One of the major goals of any trauma system is the development of programs to prevent unnecessary injuries and deaths due to trauma. Prevention will be a central focus of trauma systems because it offers the greatest potential for reducing the cost of trauma care, as well as morbidity and mortality. The goal of these programs is to reduce behavioral and environmental risks by mobilizing communities through citizen involvement and expanded partnerships. Education and awareness strategies are often employed to encourage individuals to protect themselves from harm. However, effective prevention requires a multifaceted approach, including the development and implementation of strategies to decrease individual risk factors and environmental risks.

Mississippi's EMS and Trauma Systems are grounded in a community-based health management program that is fully integrated into the overall health system. This program is designed to identify and modify injury risks.

In September of 2000, through the State Health Departments Communications and Public Relations Division, a four (4) year, five phase, Public Awareness and Prevention campaign for the Mississippi Trauma Care System was introduced. This program involves both the statewide and regional levels of the trauma system.

The Statewide component will focus on the collection of EMS/Trauma data and support of research utilizing this data; the development and aggregation of resources for distribution to medical groups and trauma regions for public education; and the education of the state policy makers including sponsoring necessary legislation.

Regional and local programs will focus on the coordination of existing professional and public/community health and safety agencies/networks. EMS/trauma data will be supplied to these agencies and partnerships established to improve the effectiveness and efficiency of efforts to address the communities emergency health needs.

Goals

- *Assist the Trauma regions with the development of clinical and public trauma education programs*
- *Assure that there are appropriate trauma public awareness programs in the area of public prevention*

Pre-hospital Care

Pre-hospital care is provided by both private and hospital based ambulance services. Each of these services has its own medical director and medical control system. While there are statewide requirements for these services, treatment protocols vary from provider to provider. In 2003, the BEMS revised the EMS regulations to require ambulances services to adher to Regional Trauma Care treatment and destination policies. These destination policies, based on the Regional Trauma Plan, are designed to deliver trauma patients to the closest, most appropriate facility, regardless of the nearest facility or the affiliation of the ambulance service.

Destination protocols are established by the Regional Trauma Advisory Council and are continuously reviewed to assure trauma patients access to the most appropriate care based on their injuries.

The ultimate state goal for the prehospital care system is a statewide prehospital communications system and Regional medical control for all hospital providers in a given Trauma System Region.

Each Region is responsible for providing education programs for the prehospital care providers. This education will stress regional protocols appropriate to the level of care being provided. Prehospital care providers will participate in the ongoing Regional evaluation and Performance Improvement programs.

Goals

- *Revise and adjust the prehospital care regulations to assure their integration within the trauma system*
- *Provide assistance to the Trauma Regions in providing necessary trauma systems education to the prehospital care providers*
- *Assist with the interregional coordination of prehospital care providers*

Definitive Care

Mississippi has 97 hospitals (including the Elvis Presley Memorial Trauma Center in Memphis, Tennessee), 91 are considered acute care facilities with emergency departments.

The EMS Trauma Care Task Force in its 1997 Final Report and Recommendation suggested that the State develop standards for a Statewide Inclusive Trauma System. As part of this system hospitals apply, undergo review, and are designated at various levels indicating the level of trauma care they are committed to providing to injured patients.

Hospitals interested in being designated must submit an application to the State EMS office describing, in detail, how they meet each of the requirements within their requested designation level and undergo a review by outside medical personnel. The purpose of this is to provide an independent validation of the standards by experts.

Designation at one of the four levels is required for hospitals and their medical staff to receive indigent care compensation. Other requirements include participation in Regional and Statewide data collection and review. Currently 77% of hospitals with emergency departments are participants of the Mississippi Trauma Care System. A total of 56% of the hospitals with an emergency department have been provisionally designated as a trauma center. A total of 16% of the hospitals with an emergency department have been completely designated as a trauma center.

Level 1 Hospitals	**2**
Level II Hospitals	**5**
Level III Hospitals	**8**
Level IV Hospitals	**51**
Total Designated Hospitals	**66**

It has been long recognized that all hospitals are not capable of treating severely injured patients equally. Mississippi, following national patient care standards set forth by the American College of Surgeons (ACS) has developed a hospital classification scheme as described above. Based on this classification scheme, patients may be transferred from the field or from a facility to a facility based on that individuals medical needs and the level of designation each facility has. These transfers may seem, and may in fact be, contrary to the transfer concept set forth by the Federal Government in its EMTALA Regulations. The triage and transfer protocols in Mississippi are based on the concept of getting the right patient to the right hospital in the shortest period of time. In order to do this some hospitals may be completely bypassed in favor of a more distant but more medically capable hospital.

The current system is Regionally based and is built on an “inclusive model” which allows all hospitals to participate in the trauma system plan. The goal of the inclusive model is to assure that all trauma patients receive optimal care, given available resources, and that the needs and location of the patient are matched with the resources of the system. Each trauma care region must develop and implement a performance improvement process to evaluated the effectiveness of these resources. This process may be accomplished through the region’s medical performance improvement committee.

Each designated facility will be required, based on their level of designation, to have in place trauma patient transfer agreements with higher level designated facilities. These transfer agreements will include suggested patient transfer guidelines. All patients being transferred from one facility to another will be subjected to a local and regional review to assure medically appropriate transfers. BEMS has implemented a web-based hospital status program to assist medical control physician on triaging trauma patients to the most appropriate trauma center. This program will provide medical control physicians with the ability to determine which resources a facility has available and which are currently closed.

Rehabilitation is an important component of trauma care. It is a well-established fact that trauma patients recover more rapidly and completely when rehabilitation is instituted early in the acute care phase.

All designated trauma facilities must have a plan in place, including transfer agreements, for the early institution of rehabilitation.

Goals

- *Encourage all Mississippi hospitals to participate in the trauma system*
- *Provide additional assistance to hospitals that cannot meet certain trauma center standards*
- *Assist Trauma regions with coordination of trauma care between Regions*
- *Assist Trauma Regions with coordination of trauma care with hospitals outside the state of Mississippi*
- *Encourage and assist hospitals that wish to upgrade their trauma center status*

Evaluation

The Mississippi Statewide Trauma System is a dynamic system initially based on national standards modified to meet Mississippi needs. In order to assure patients have access to and are transported to the closest, most appropriate trauma facility, data will be collected and reviewed on all trauma patients.

BEMS requires all designated trauma hospitals to participate in the state trauma registry system. There are four objectives of maintaining the trauma registry. These are performance improvement, hospital operations, injury prevention, and medical research. Of the four, performance improvement is the primary reason for maintaining a trauma registry. When utilized appropriately, performance improvement can be done in a much more efficient manner than if done manually. Secondly, the registry can help in managing resource utilization through daily logs, summaries, etc. Also, a requirement of all designated trauma centers in Mississippi is to participate in injury control activities (injury prevention). The registry helps to identify injury control issues at the local, regional, and state levels. Finally, by all designated facilities capturing standardized data, the information can be used in clinical research.

The state registry system is designed primarily to collect data on only those patients with serious injuries. It is also designed to identify system issues, such as over and under triage, at the regional and state levels. In order to track these patients effectively, BEMS has identified criteria for a patient to be included in the registry at the local level. This is the inclusion criteria that is REQUIRED for all designated trauma centers. ALL CENTERS MUST INCLUDE, AT A MINIMUM, ALL PATIENTS THAT MEET THESE CRITERIA. This is regardless of payment source, indigent status, etc. This is the data that a trauma center must capture in order to maintain an effective trauma program. Data collection will begin with systems and field data and continue through patient discharge/autopsy.

Data will be reviewed and analyzed at no less than three separate levels. Primary patient care data will be reviewed at each facility by its Trauma Committee. These committees will utilize nationally accepted patient review criteria and will also review the prehospital care of trauma patients.

Secondary data review will take place at the Regional level. While the main focus of this review will be on systems compliance, patient data will be reviewed for educational purposes. Regional systems data review involves the analysis of patient data to assure compliance with Regional treatment and transfer protocols. Variances from existing criteria will be reviewed to assure the appropriateness of the criteria. Variances from Statewide criteria/regulations will be reviewed as well and recommendations for changes made where appropriate.

The final level of data review will take place at the state level. Each Trauma Region is required to aggregriate their data and forward it to the State.

The statewide data will be used to review the statewide criteria and epidemiological purposes. The Statewide Education/Prevention program will be based on this data.

All state designated patients must have a **primary diagnosis of ICD-9 diagnosis code 800-959.9,** EXCLUDING the following:

ICD9Code 905-909 (Late effects of injuries).
ICD9Code 930-939 (Foreign bodies).
Extremities and/or hip fractures from same height fall in patients over the age of 65.
Late Effects Injuries, Poisonings, Toxic Effeccts, and Other External Causes.
Effects of Foreign Body Entering Through an Orifice.

Plus any one of the following:

Transferred between acute care facilities (in or out).
Admitted to critical care unit (no minimum).
Hospitalization for three or more calendar days.

Died after receiving any evaluation or treatment.
Admitted directly from Emergency Department to Operating Room for major procedure, excluding plastics or orthopedic procedures on patients that do not meet the three day hospitalization criteria.
Triaged (per regional trauma protocols) to a trauma hospital by prehospital care regardless of severity.
Treated in the Emergency Department by the trauma team regardless of severity of injury.

Appendences

Appendix

A **Mississippi State Trauma Statutes**

B **Mississippi State Trauma Regulations**

Level I Requirements
Level II Requirements
Level III Requirements
Level IV Requirements

C **Office of Emergency Planning and Response Organization Chart**

D **Central Trauma Care Region Plan**

E **Coastal Trauma Care Region Plan**

F **Delta Trauma Care Region Plan**

G **East Central Trauma Care Region Plan**

H **Northern Trauma Care Region Plan**

I **Southeast Trauma Care Region Plan**

J **Southwest Trauma Care Region Plan**

K **Mississippi Pre Hospital Model Trauma Protocols**

Appendix A

Mississippi State Trauma Statutes

Appendix B

Mississippi State Trauma Regulations

Appendix C

Bureau of EMS/ Trauma System Development Organization Chart

Appendix D

Central
Trauma Care Region
Trauma Plan

Appendix E

Coastal
Trauma Care Region
Trauma Plan

Appendix F

Delta
Trauma Care Region
Trauma Plan

Appendix G

East Central Trauma Care Region Trauma Plan

Appendix H

Northern Trauma Care Region Trauma Plan

Appendix I

Southeast
Trauma Care Region
Trauma Plan

Appendix J

Southwest Trauma Care Region Trauma Plan

Appendix K

Mississippi Pre Hospital Model Trauma Protocols